

observed stratigraphic level, and depths were measured relative to ground surface. All excavated soils were passed through quarter-inch mesh hardware cloth to maximize artifact recovery. Stratigraphic profiles of each test were recorded on standardized forms, listing soil texture, color, and inclusions. Recovered artifacts were bagged in polyethylene bags according to provenience. Provenience information for each artifact bag was recorded on a master Bag Inventory sheet. Shovel tests were numbered consecutively in order of excavation.

Preliminary Walkover

In planning a field strategy for the project, a walkover survey was conducted in co-ordination with Kevin Cunningham, of DelDOT. Areas were sought in which small terraces or benches were present that had the potential to contain evidence of prehistoric activity. As will be described in detail in the section that follows, the most likely locations occurred along stretches of right-of-way west of the road which exhibited little slope. With little slope, stabilization measures and realignment were not required: only resurfacing of the existing roadbed was scheduled. Since there was no potential impact from construction, these areas were not tested. Other stretches bore steep slopes with no level areas near the road cut, making them unsuitable for testing. Along two stretches, that measured approximately 150 m each, moderate slopes lay west of the road, and there was some evidence of terracing between the road cut and the side slope. These portions of the alignment were targeted for shovel test survey.

Survey Results

For descriptive purposes, the project area is divided into six sections (Figure 4). The sections correspond with engineering plans that subdivide the right-of-way into map sheets, each covering approximately 200 m of right-of-way length. Present conditions are summarized for each map sheet, and the potential for impact from the proposed road improvement is noted. Shovel testing was conducted in two sections, represented by Sheets 4 and 6, and the results of the tests are presented below, with those segments. Sample shovel test profiles are illustrated in Figure 5.

Sheet 1 (Figure 6)

Sheet 1 covers a length of 90 m, beginning at the intersection of Upper Pike Creek and New Linden Hill Road. Proposed development in this section consists of pavement

overlay matching the existing road surface. There is no potential for impact beyond the present road alignment, and thus no archaeological testing was conducted.

Sheet 2 (Figure 7)

Sheet 2 covers a length of 220 m. Slope stabilization is proposed along most of the right-of-way included on the sheet. Slopes to the west are steep, 50 percent or greater, and no terraces or benches were noted near the road cut. No archaeological testing was conducted.

Sheet 3 (Figure 8)

Sheet 3 covers a length of 230 m. Slopes to the west are steep for most of the length of right-of-way on the sheet. A gully crosses the right-of-way from the west at a point approximately 450 m from the New Linden Hill Road intersection (STA 00+450). Ground surface is less steeply sloped north of the gully, yet the proposed improvement along the length covered by Sheet 3 consists of pavement overlay matching the existing road surface. There is no potential for impact, and thus no archaeological testing was conducted.

Sheet 4 (Figure 9)

Sheet 4 covers a length of 220 m. Slopes to the west are steep along this section, and stabilization measures are proposed. Several small benches were noted in the preliminary walkover survey, and these areas were targeted for testing. Seven shovel tests were excavated at intervals ranging from 10 to 20 m, with the widest interval occurring near the center of the segment, where the terrain slopes steeply to the edge of the road cut. Along most of this segment, the height of the cut, as measured from the road surface to the top of the cut, ranged between 1.5 and 4.5 m. The areas that were sufficiently level for shovel testing lay on slopes estimated between 10 and 15 percent, while slopes immediately to the west continued at 25 to 75 percent.

The shovel tests along this segment showed a consistent profile, exemplified by STP 4 (Figure 5). The profile consisted of a thin (5 cm) topsoil layer, followed by micaceous silt loam containing abundant fragments of schist and, less frequently, pea gravel and angular quartz. The sediment was brown (10YR 4/3) in color, loosely compacted and contained roots throughout. At depths ranging from 50 to 70 cm, the sediment graded to a more compact, yellowish brown (10YR 5/4) silt loam that was increasingly micaceous, with few if any roots. The frequency and size of the schist fragments also increased. Excavation was usually blocked at depths between 55 and 70 cm by large schist fragments. No cultural material was recovered from the shovel tests.

In one shovel test at the southern end of the transect, STP 15 (STA 00+577), a thin, silty deposit, with little gravel, lay between 55 and 65 cm below grade (Figure 5). The deposit exhibited blocky structure as evidence of incipient soil formation. Below lay micaceous, silt loam subsoil. The area was near the edge of a recent erosional cut running roughly perpendicular to the right-of-way. A larger, older drainage lay to the south. The shovel test occurred in a pocket adjacent to the gully where silt had accumulated, allowing soil to develop. No further shovel testing was conducted to the south because the proposed road improvements do not entail disturbance outside the current extent of the road.

Based on the shovel test data from this section of the project area, the upper portion of the soil profile was determined to consist of colluvium, or slope wash, that grades into undisturbed saprolitic material (defined above as sediment developing in place out of decaying bedrock). The quartz fragments in the profile were natural, eroded from veins in the schist bedrock. They varied from 1 to 10 cm in maximum dimension, and were blocky and angular in shape, typically broken on flaws or structural planes. Bedding patina occurred on breaks, suggesting fracture along natural planes into which groundwater had earlier penetrated. None of the quartz fragments exhibited artifact attributes, such as striking platforms, bulbs of percussion, or patterned flaking resulting from the crafting of usable, working edges.

Sheet 5 (Figure 10)

Sheet 5 covers a length of 210 m, the majority of which is slated for pavement overlay matching the existing road surface. Relatively level ground lay to the west, but due to the lack of potential disturbance from the proposed improvements, no archaeological testing was conducted.

Sheet 6 (Figure 11)

Sheet 6 covers a length of 235 m, ending with the northern limit of proposed construction. The road cut along this segment varies from approximately 1.4 to 1.75 m, as measured from the road surface to the top of the cut. The slope upward to the west is steep, ranging from 50 to 100 percent, but moderates near the road, where it was estimated between 10 and 25 percent. These flatter areas were targeted for shovel testing. A low berm, rising 30 to 50 cm above grade, parallels the road for 50 to 60 m near the center of the segment. An unmaintained wire fence follows the edge of the current right-of-way, on the western side of the berm for part of its length. Farther to the west, for a distance of up to 5 m, lie a series of low, irregular mounds, pits, recent drainage gullies, and a scatter of modern trash (tin cans, window glass, carpet, wire). The area is

overgrown with vines and briars, and appears to be at least in part remnant of disturbance produced during earlier road construction or maintenance.

Eight shovel tests were excavated along this segment of the right-of-way. The testing interval ranged from 10 to 40 m, the widest interval dictated by disturbance observed along the margins of the road. The shovel tests in this segment exhibited profiles similar to those excavated to the south, in the segment covered by map Sheet 4. They were exemplified by STP 12, illustrated in Figure 5. Topsoil consisted of 5 cm of silty humus. Below lay brown (10YR 4/3) micaceous silt loam, with fragments of schist, angular quartz, and pea gravel. None of the quartz fragments bore artifact attributes. The sediment extended to depths ranging from 60 to 95 cm below grade, and was unconsolidated and contained roots throughout. The deposit was interpreted as colluvium, or slope wash, associated with the ongoing erosion of the hill slope to the west. In the southern portion of the segment, through STP 10 (STA 1+125), increasingly dense deposits of schist blocked excavation below an average depth of 70 cm. These levels represented the uppermost layers of pre-Holocene, saprolitic material. To the north, schist fragments were less frequent in the deposit underlying the colluvium. Fine sand and mica content increased, and color graded to a yellowish brown (10YR 5/4). Three shovel tests (STP 11-13) were excavated to depths of 110 to 125 cm. While containing less residual bedrock, the sediments here also consisted of intact deposits associated with the pre-Holocene, saprolitic subsoil. The final, northernmost shovel test, STP 14, was excavated in a slightly lower area near the edge of a northern trending side slope leading downward to an erosional gully. Schist fragments were frequent, as in the tests at the southern end of the segment, and they blocked excavation at a depth of 90 cm. No artifacts were recovered from the shovel tests in this section of the project area, and in all cases, tests were excavated below depths at which cultural material would be expected.

East of the Road (Figure 9)

Engineering plans indicate that most of the realignment that is proposed occurs to the west of the current road surface, cutting further into the slope to straighten bends that were originally built around the more prominent ridges on the slope face. In very few places does the new limit of construction extend beyond the existing eastern edge of the right-of-way, toward the creek. As a control, a shovel test was excavated in one such area, on the floodplain adjacent to the creek, approximately 2 m below the road surface. The profile revealed in this test, STP 16 (Figure 5), consisted of a 50 cm thick layer of micaceous brown (10YR 4/3) silt loam, with mineral staining and no gravel inclusions. The deposit graded to a siltier, but still micaceous yellowish brown (10YR 5-6/4) deposit,

with evidence of gleying (patchy gray organic and yellow mineral staining). Both sediment layers were finer in texture than those documented west of the road, and represented a combination of overbank, alluvial deposition and colluvium. Schist bedrock fragments were encountered at a depth of 70 cm, and they quickly blocked further excavation. Subsoil thus appeared to consist of saprolitic material overlain by a mantle of slopewash, both of which are periodically flooded. Recurrent flood-related scouring is also likely at this elevation above the stream channel. There was no evidence to indicate that buried cultural deposits would be expected in the creek floodplain.

Conclusions and Recommendations

The cultural resource survey conducted as part of the Upper Pike Creek Road Slope Stabilization project determined that there are no historic properties within the proposed APE.

Archival research indicated that there are no previously recorded archaeological sites or historic properties in the project area. Initial map study and a walkover survey suggested that the potential for prehistoric archaeological sites was low, largely due to the steepness of the side slope into which Upper Pike Creek Road presently cuts. The proposed improvements entail cutting the roadway further into the slope, to straighten the right-of-way and stabilize the cut banks. The few level areas or benches found above the existing cut were tested with a total of fifteen shovel tests.

Depositional profiles in shovel tests showed a consistent pattern of colluvium overlying degraded bedrock residuum. Because the overall angle of the hillslope is substantial, erosion is extensive. It may have been intensified by historic period land clearing, as well as by recent suburban development in the form of housing tracts on the ridge above the Pike Creek valley. Yet the gradual transition seen in the profile from colluvium to subsoil indicates that the process is not merely recent. No artifacts were recovered from the shovel tests excavated in the project area. In all cases, tests were excavated below depths at which cultural material would be expected. This conclusion was based on the identification of sediments developing out of decaying bedrock.

In summary, no cultural resources were identified during survey of the project area, and no further work is recommended.